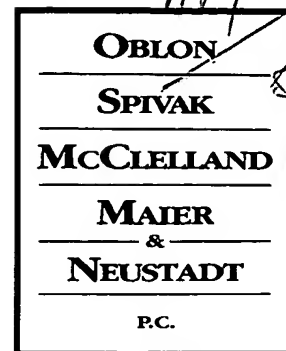




Docket No.: 245497US41X CONT



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COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

RE: Application Serial No.: 10/717,672

Applicants: Alexandre CORJON, et al.

Filing Date: November 21, 2003

For: APPARATUS FOR ACCELERATING  
DESTRUCTION OF A VORTEX FORMED BY A  
WING OF AN AIRCRAFT

Group Art Unit: 3644

Examiner: Holzen, S.

SIR:

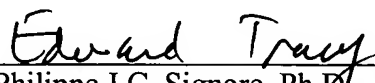
Attached hereto for filing are the following papers:

**APPEAL BRIEF WITH APPENDICES**

Our credit card payment form in the amount of **\$500.00** is attached covering any required fees. In the event any variance exists between the amount enclosed and the Patent Office charges for filing the above-noted documents, including any fees required under 37 C.F.R. 1.136 for any necessary Extension of Time to make the filing of the attached documents timely, please charge or credit the difference to our Deposit Account No. 15-0030. Further, if these papers are not considered timely filed, then a petition is hereby made under 37 C.F.R. 1.136 for the necessary extension of time. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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DOCKET NO. 2003497US41X CONT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :  
ALEXANDRE CORJON, ET AL. : EXAMINER: HOLZEN, S.  
SERIAL NO: 10/717,672 :  
FILED: NOVEMBER 21, 2003 : GROUP ART UNIT: 3644  
FOR: APPARATUS FOR :  
ACCELERATING DESTRUCTION OF A  
VORTEX FORMED BY A WING OF AN  
AIRCRAFT

APPEAL BRIEF

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

This is an appeal from the decision of the Examiner dated July 25, 2006, which finally rejected Claims 1, 2, 8-11, 14-20, 23-30, 33, and 36 in the above-identified patent application.

I. REAL PARTY-IN-INTEREST

The real part-in-interest is Airbus France S.A.S.

II. RELATED APPEALS AND INTERFERENCES

U.S. Application No. 10/717,465, which also claims priority to U.S. Patent Application No. 10/080,407, is also under appeal.

### III. STATUS OF CLAIMS

Claims 1, 2, 8-11, 14-20, 23-30, 33, and 36 have been finally rejected and form the basis for this appeal. Claims 3-7, 12, 13, 21, 22, 31, 32, 34, and 35 are withdrawn. Appendix VIII includes a clean copy of appealed Claims 1, 2, 8-11, 14-20, 23-30, 33, and 36.

### IV. STATUS OF AMENDMENTS

No amendments after final rejection have been filed.

### V. SUMMARY OF CLAIMED SUBJECT MATTER

Independent Claim 1 is directed to an aircraft including a wing and a perturbation device. The wing forms a vortex at a rear portion thereof by a merging of a first co-rotating eddy with a second co-rotating eddy. The perturbation device is disposed adjacent an area of creation of the first co-rotating eddy. The perturbation device is configured to generate a periodic perturbation having a wavelength configured to excite at least one instability mode of the first co-rotating eddy to accelerate a destruction of the vortex. This aircraft is described in the specification from page 7, line 24 to page 10, line 16, as illustrated by Figure 1. Aircraft 2 includes wing 3A and perturbation device 11. Wing 3A forms vortex 5A at a rear portion thereof by merging first co-rotating eddy 7A with second co-rotating eddy 8A. Perturbation device 11 is disposed adjacent an area 10A of creation of the first co-rotating eddy 7A. Perturbation device 11 is configured to generate a periodic perturbation having a wavelength configured to excite at least one instability mode of first co-rotating eddy 7A to accelerate a destruction of vortex 5A.

Independent Claim 10 is directed to an aircraft including a wing and means for generating a periodic perturbation. The wing forms a vortex at a rear portion thereof by a merging of a first co-rotating eddy with a second co-rotating eddy. The means for generating

a periodic perturbation generates a periodic perturbation having a wavelength configured to excite at least one instability mode of the first co-rotating eddy. The means for generating is disposed adjacent an area of creation of the first co-rotating eddy. This aircraft is described in the specification from page 7, line 24 to page 10, line 16, as illustrated by Figure 1.

Aircraft 2 includes wing 3A and means for generating a periodic perturbation 11. Wing 3A forms vortex 5A at a rear portion thereof by merging first co-rotating eddy 7A with second co-rotating eddy 8A. Means for generating a periodic perturbation 11 is disposed adjacent an area 10A of creation of the first co-rotating eddy 7A. Means for generating a periodic perturbation 11 is configured to generate a periodic perturbation having a wavelength configured to excite at least one instability mode of first co-rotating eddy 7A to accelerate a destruction of vortex 5A.

Independent Claim 16 is directed to an aircraft including a first and a second wing and a first and a second perturbation device. The first wing forms a first vortex at a rear portion thereof by a merging of a first co-rotating eddy with a second co-rotating eddy. The second wing forms a second vortex at a rear portion thereof by a merging of a third co-rotating eddy with a fourth co-rotating eddy. The first perturbation device is disposed adjacent an end of a first flap of the first wing. The second perturbation device is disposed adjacent an end of a second flap of the second wing. The first and second perturbation devices are configured to generate periodic perturbations having wavelengths configured to excite instability modes of the first and third co-rotating eddies. Diameters of the first and second contra-rotating vortices with excited instability modes are greater than a predetermined proportion of a distance between the first and second contra-rotating vortices. This aircraft is described in the specification from page 7, line 24 to page 10, line 16, as illustrated by Figure 1. Aircraft 2 includes first wing 3A and second wing 3B. First wing 3A forms first vortex 5A at a rear portion thereof by merging first co-rotating eddy 7A with second co-rotating eddy 8A.

Second wing 3B forms second vortex 5B at a rear portion thereof by merging third co-rotating eddy 7B with fourth co-rotating eddy 8B. First perturbation device 11 is disposed adjacent an end of a first flap 6A of the first wing 3A. Second perturbation device 11 is disposed adjacent an end of a second flap 6B of the second wing 3B. The first and second perturbation devices 11 are configured to generate periodic perturbations having wavelengths configured to excite instability modes of the first and third co-rotating eddies 7A and 7B, respectively. Diameters of the first and second contra-rotating vortices 5A and 5B, respectively, with excited instability modes are greater than a predetermined proportion of a distance D between the first and second contra-rotating vortices 5A and 5B, respectively.

## VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

The grounds of rejection to be reviewed on appeal are whether Claims 1, 2, 8-11, 14-20, 23-30, 33, and 36 are anticipated under 35 U.S.C. §102(b) by Yuan (U.S. Patent No. 3,936,013), or in the alternative, are unpatentable under 35 U.S.C. §103(a) over Yuan in view of ordinary skill in the art.

## VII. ARGUMENTS

### A. Introduction

Claim 1 recites, *inter alia*, an aircraft, comprising:

a wing forming a vortex at a rear portion thereof by a merging of a first co-rotating eddy with a second co-rotating eddy; and

a perturbation device disposed adjacent an area of creation of the first co-rotating eddy, the perturbation device being configured to generate a periodic perturbation having a wavelength configured to excite at least one instability mode of the first co-rotating eddy to accelerate a destruction of the vortex.

B. Claims 1, 2, 8-11, 14-20, 23-30, 33, and 36 are not anticipated by or unpatentable over Yuan

The outstanding Office Action cited *In re Schreiber* in concluding that the above-recited features of Claim 1 do not have any patentable weight. The Office Action further stated that “Phrases such, as ‘configured to excite’ and ‘to accelerate’ do not limit any structural element of the aircraft.” It is agreed that the holding of *In re Schreiber* is very pertinent to the present application. However, it is respectfully submitted that *In re Schreiber* holds that the above-recited features of Claim 1 **do have patentable weight**, contrary to the conclusion of the outstanding Office Action.

*In re Schreiber* holds that “While features of an apparatus may be recited either structurally **or functionally**, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function.” *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). (Emphasis added.) In the present case, Claim 1 recites the features of the claimed apparatus **functionally**, in accordance with the above-quoted case law. Claim 1 includes the structural feature of a perturbation device that includes structure such that the device functions to generate a periodic perturbation having a wavelength configured to excite at least one instability mode of the first co-rotating eddy to accelerate a destruction of the vortex. In contrast, it is respectfully submitted that Yuan does not teach any structure that functions to excite **any** instability mode of a vortex, nor has any such structure been cited by the outstanding Office Action. The conclusion of the outstanding Office action that the structural features recited functionally in Claim 1 have no patentable weight is clearly contrary to the holding of *In re Schreiber*.

Even more striking is the conclusion of the outstanding Office Action with regard to Claim 10. As Claim 10 recites “means for generating a perturbation,” the conclusion that such a function amounts to an intended use would nullify the patentability of any “means plus

function” element. Accordingly, Claims 1 and 10 properly recite structural features of an apparatus using functional limitations. As Yuan does not teach or suggest any structure that has such a function, and no other reference has been cited as teaching such a device, a *prima facie* case of obviousness has not been made with respect to either Claims 1 or 10.

In response, the Advisory Action of November 17, 2006 asserted that “in order to anticipate (or render obvious) the functional language of the claims, the prior art only need teach the capability of performing the function. (see examiner’s arguments from final rejection).”<sup>1</sup>

However, the Office Action dated July 27, 2006 does not include such a conclusion, nor does the Office Action or the Advisory Action include any citation to an authority which supports such a conclusion. In fact, it is respectfully submitted that an unwitting duplication of a claimed invention is *not* an anticipation (or a *prima facie* case of obviousness). *In re Felton* states:

Therefore, it would be mere happenstance if any structure made according to Sands met the limitations of the claims. ***An accidental or unwitting duplication of an invention cannot constitute an anticipation.*** *Tilghman v. Proctor*, 102 U.S. 707 (1880); *Eibel Process Co. v. Minnesota and Ontario Paper Co.*, 261 U.S. 45 (1923).<sup>2</sup>

In the present case, it is respectfully submitted that there is no evidence that the structure of the device described by Yuan is “configured to generate a periodic perturbation having a wavelength configured to excite at least one instability mode of the first co-rotating eddy to accelerate a destruction of the vortex.” Further, even assuming *arguendo* that a device constructed according to Yuan performed this function, at best this would be an unwitting duplication, and thus will still not be a proper basis for a rejection of Claim 1.

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<sup>1</sup>See the Advisory Action dated November 17, 2006, page 2, lines 5-8.

<sup>2</sup>*In re Felton*, 179 USPQ 295, 298 (CCPA 1973). (Emphasis added).

Moreover, statements in the Office Action of July 25, 2006 such as “The prior art teaches a device that is manufactured and arranged to be capable of generating a periodic perturbation”<sup>3</sup> and “Therefore as long as the apparatus of Yuan be configured to function in the claimed manner (be configured to generate a periodic perturbation) then the claimed invention is anticipated (rendered obvious)”<sup>4</sup> ignore the feature in Claim 1 that the perturbation device is “configured to generate a periodic perturbation *having a wavelength configured to excite at least one instability mode of the first co-rotating eddy to accelerate a destruction of the vortex.*” As all limitations in a claim must be considered,<sup>5</sup> even assuming *arguendo* that the device described by Yuan creates a periodic perturbation, Yuan does not expressly or inherently describe a device that is “configured to generate a periodic perturbation *having a wavelength configured to excite at least one instability mode of the first co-rotating eddy to accelerate a destruction of the vortex.*” Thus, Yuan does not teach or suggest “a perturbation device” as defined in Claim 1.

The Advisory Action further cites *In re Young* in an assertion that Claim 1 only limits a material being worked on and not the claimed structure. However, Claim 1 clearly recites “a perturbation device configured to generate a periodic perturbation *having a wavelength configured to excite at least one instability mode of the first co-rotating eddy to accelerate a destruction of the vortex.*” Thus the function of creating a periodic perturbation having a wavelength configured to excite at least one instability mode of the first co-rotating eddy to accelerate a destruction of the vortex is a structural feature of the *perturbation device, not the air* flowing around the perturbation device. Thus, *In re Young* is not pertinent to the present application.

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<sup>3</sup>See the Office Action dated July 25, 2006, page 4, lines 5-6.

<sup>4</sup>See the Advisory Action dated November 17, 2006, page 2, lines 13-15.

<sup>5</sup>“All words in a claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). See also MPEP §2143.03.



Consequently, as Yuan does not teach or suggest the perturbation device as defined in Claim 1, Claim 1 (and Claims 2, 8, 9, 18-23, and 33 dependent therefrom) is not anticipated by Yuan, or unpatentable over Yuan. As Claim 16 recites similar subject matter to Claim 1, Claim 16 (and Claims 17 and 27-30 dependent therefrom) are also patentable over Yuan.

Finally, regarding Claim 10 (and claims dependent therefrom) the Advisory Action does not address the issue that Claim 10 recites "means for generating a periodic perturbation having a wavelength configured to excite at least one instability mode of the first co-rotating eddy, the means for generating being disposed adjacent an area of creation of the first co-rotating eddy" and Yuan does not teach or suggest any such means. The assertions that claims of the present application only recite an intended use are irrelevant to "means plus function" claims, as these claims always recite the structure of the claimed apparatus functionally.

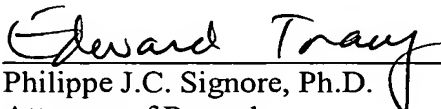
Thus, as Yuan does not teach or suggest means for generating a periodic perturbation as defined in Claim 10, Claim 10 (and Claims 11, 14, 15, 24-26, and 36 dependent therefrom) is patentable over Yuan.

#### Conclusion

It is respectfully requested that the outstanding rejections be REVERSED.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

Claim 1: An aircraft comprising:

a wing forming a vortex at a rear portion thereof by a merging of a first co-rotating eddy with a second co-rotating eddy; and

a perturbation device disposed adjacent an area of creation of the first co-rotating eddy, the perturbation device being configured to generate a periodic perturbation having a wavelength configured to excite at least one instability mode of the first co-rotating eddy to accelerate a destruction of the vortex.

Claim 2: The aircraft according to claim 1, wherein the perturbation device is disposed adjacent a flap of the aircraft.

Claim 8: The aircraft according to claim 2, wherein the perturbation device comprises a fluid jet.

Claim 9: The aircraft according to claim 8, wherein the fluid jet is disposed within one of the wing and the flap of the aircraft.

Claim 10: An aircraft comprising:

a wing forming a vortex at a rear portion thereof by a merging of a first co-rotating eddy with a second co-rotating eddy; and

means for generating a periodic perturbation having a wavelength configured to excite at least one instability mode of the first co-rotating eddy, the means for generating being disposed adjacent an area of creation of the first co-rotating eddy.

Claim 11: The aircraft according to claim 10, wherein the means for generating is disposed adjacent a flap of the aircraft.

Claim 14: The aircraft according to claim 11, wherein the means for generating comprises a fluid jet.

Claim 15: The aircraft according to claim 14, wherein the fluid jet is disposed within one of the wing and the flap of the aircraft.

Claim 16: An aircraft comprising:

a first wing forming a first contra-rotating vortex at a rear portion thereof by a merging of a first co-rotating eddy with a second co-rotating eddy;

a second wing forming a second contra-rotating vortex at a rear portion thereof by a merging of a third co-rotating eddy with a fourth co-rotating eddy;

a first perturbation device disposed adjacent an end of a first flap of the first wing; and

a second perturbation device disposed adjacent an end of a second flap of the second wing, wherein

the first and second perturbation devices are configured to generate periodic perturbations having wavelengths configured to excite instability modes of the first and third co-rotating eddies, and

diameters of the first and second contra-rotating vortices with excited instability modes are greater than a predetermined proportion of a distance between the first and second contra-rotating vortices.

Claim 17: The aircraft according to claim 16, wherein the predetermined proportion is approximately 30%.

Claim 18: The aircraft according to claim 1, wherein the periodic perturbation is a Benard-von Karman instability.

Claim 19: The aircraft according to claim 1, wherein the periodic perturbation induces an increase in three-dimensional elliptic instabilities.

Claim 20: The aircraft according to claim 1, wherein the instability mode is an internal instability mode of a core of the first co-rotating eddy.

Claim 23: The aircraft according to claim 9, wherein the fluid jet emits a fluid transversally to a flow around the wing of the aircraft and thus to a longitudinal axis of the first co-rotating eddy.

Claim 24: The aircraft according to claim 10, wherein the periodic perturbation is a Benard-von Karman instability.

Claim 25: The aircraft according to claim 10, wherein the periodic perturbation induces an increase in three-dimensional elliptic instabilities.

Claim 26: The aircraft according to claim 14, wherein the fluid jet emits a fluid transversally to a flow around the wing of the aircraft and thus to a longitudinal axis of the first co-rotating eddy.

Claim 27: The aircraft according to claim 16, wherein the periodic perturbations are Benard-von Karman instabilities.

Claim 28: The aircraft according to claim 16, wherein the periodic perturbations induce increases in core diameters of the co-rotating eddies.

Claim 29: The aircraft according to claim 16, wherein the periodic perturbations induce increases in three-dimensional elliptic instabilities.

Claim 30: The aircraft according to claim 16, wherein the instability mode to be excited is determined from sizes of cores of the eddies and ratios between the sizes of the cores of the eddies and a distance between the eddies.

Claim 33: The aircraft according to claim 1, wherein the perturbation device is configured to eject a fluid at a velocity equal to or greater than a velocity of the aircraft.

Claim 36: The aircraft according to claim 10, wherein the means for generating is configured to eject a fluid at a velocity equal to or greater than a velocity of the aircraft.

IX. EVIDENCE APPENDIX

None.

Application Serial No. 10/717,672  
Reply to Office Action of July 25, 2006

X. RELATED PROCEEDINGS APPENDIX

No decision has been rendered in the appeal of U.S. Patent Application No.  
10/717,465.